

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION

OF: ANDERLIK ET AL

SERIAL No. 09/762,396

FILED: MARCH 16, 2001

FOR: POLYMER AND PLASTIC WITH LONG-LASTING ODOR AND USE THEREOF



MAIL STOP: RCE

CONFIRMATION No.: 3913

GROUP ART UNIT: 1616

EXAMINER: NEIL S. LEVY

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents and Trademarks, Alexandria, Va 22313-1450, on:

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Honorable Commissioner  
for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

SUPPLEMENTAL REMARKS

Sir:

This is a Request for Continued Examination pursuant to 37 C.F.R. §1.114 which is filed in response to the final Office action of January 10, 2005. It is respectfully requested that applicants' reply dated March 4, 2005, as well as the following and the attached be entered and considered for further prosecution:

REMARKS

The Examiner reiterated the position that applicants' Claims 1, 2, 4 to 14 and 17 to 22 were unpatentable under 35 U.S.C. §103(a) for being obvious in light of the teaching of *Pougalan et al.* (US 4,734,278) when taken in view of the disclosure of *Sand* (US 4,598,006) and of *Perman et al.* (US 5,340,614). The Examiner took *inter alia* the position

- (1) that the teaching of *Pougalan et al.* encompassed cross-linked resins because there was nothing of record which supported that the resins employed in the teaching of *Pougalan et al.* were not cross-linked to some extent<sup>1)</sup>;

1) Cf. No. 11 of the advisory action dated May 06, 2005.

- (2) that the teaching of *Sand* provided for the preparation of odorant containing polymers inclusive of crosslinked rubbers<sup>2)</sup>, and
- (3) that the disclosure of *Sand* and *Perman et al.* conveyed that cross-linked rubber-like polymers were swellable so long as they were impregnated with supercritical fluids<sup>3)</sup>.

For the following reasons, the Examiner's position is not deemed to be well taken and the Examiner's arguments are not deemed to support a finding that applicants' invention is unpatentable within the meaning of Section 103(a).

With a view to (1) of the Examiner's assertions it is respectfully noted that the teaching of *Pougalan et al.* contains nothing which suggests or implies that the *thermoplastic* polyamidic resins have any degree of crosslinking. To corroborate that a person of ordinary skill in the art considers *thermoplastic* materials as not being cross-linked, applicants herewith enclose a copy of page 4 of *Fried's "Polymer Science and Technology"*<sup>4)</sup> which explains the distinction which is made in the pertinent art between *thermoplastic materials* which are non-crosslinked and can be processed thermally, and *thermoset materials* which cannot be thermally processed because the cross-linked networks resist heat softening. Additionally and for completeness sake, applicants herewith enclose a product description of Pebax® polymers as employed in accordance with the teaching of *Pougalan et al.*<sup>5)</sup>. Accordingly, the respective thermoplastic polyamidic resins are "*polyether block amides*" and *thermoplastic elastomers*. The Examiner's assertion that the thermoplastic polyamidic resins which are addressed in the teaching of *Pougalan et al.* could be cross-linked to some extent is, therefore deemed to be without a reasonable basis in the reference itself or in the pertinent technical background knowledge.

For similar reasons, applicants' respectfully disagree with the Examiner's statement that the disclosure of *Sand* addresses mixing an odorant with a cross-linked rubber. The polymer materials which are employed in accordance with the disclosure of *Sand* are *thermoplastic* and representatives include *polypropylene, polyethylene, ethylene-vinyl acetate (EVA) copolymer and ethylene-ethyl acetate copolymer*<sup>6)</sup>. The Examiner's interpretation of the disclosure of *Sand* is therefore deemed to be in error.

The Examiner's position that cross-linked rubber-like polymers were swellable so long as they were impregnated with supercritical fluids is also not deemed to be well taken. In accordance with the disclosures of *Sand* and of *Perman et al.*, the swelling is achieved by contacting the referenced polymer with volatile swelling agents which are at or near supercritical conditions. The impregnation of the respective polymers with the desired ingredient is achieved in the procedures of *Sand* and *Perman et al.* by dissolving the desired ingredient in the volatile swelling agent and exposing the polymer at or near supercritical conditions of the volatile swelling agent with a solution of the ingredient in the volatile swelling agent<sup>7)</sup>, or by first swelling the polymer with the supercritical fluid and then exposing the swollen polymer to a solution of the desired

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2) Cf. page 2, lines 9 to 15, of the action dated January 10, 2005.

3) Cf. page 3, lines 1 to 8, of the action dated January 10, 2005.

4) Prentice Hall PTR, Englewood Cliffs, NJ (1995).

5) Cf. col. 3, indicated lines 3 to 8, of *US 4,734,278*.

6) Cf. col. 3, indicated lines 55 to 59, of *US 4,598,006*.

7) Cf., for example, col. 2, indicated lines 22 to 32, and col. 3, indicated lines 18 to 23, of *US 4,598,006*.

agent<sup>8)</sup>. The disclosures of *Sand* and of *Perman et al.* therefore clearly fail to suggest or imply that any one of the enumerated polymers can be swollen by anything other than the supercritical fluid, and nothing in these references suggests or implies that the polymer be impregnated with a supercritical fluid to render it swellable.

It is also respectfully urged that three basic criteria have to be met in order to establish a *prima facie* case of obviousness:

- (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings,
- (2) there must be a reasonable expectation of success, and
- (3) the prior art reference or the combined references must teach or suggest all of the claim limitations.

In this context, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and cannot be based on the applicant's disclosure<sup>9)</sup>.

None of those basic criteria is met where applicants' process and the art applied by the Examiner is concerned: In accordance with the teaching of *Pougalan et al.* it is necessary to employ a particular *thermo-plastic* polyether-ester-amide type resin which is capable to absorb volatile active substances. A person of ordinary skill in the art could not reasonably expect that an attempt to absorb volatile active substances into a polymer would be successful when the particular *thermoplastic* polyether-ester-amide type resin of *Pougalan et al.* was replaced by another polymer material. This lack of a reasonable expectation of success is supported by the disclosures of *Sand* and of *Perman et al.* since the procedures involved in impregnating polymers which are addressed in these references don't involve an absorption of the ingredients with which the polymers are impregnated. Since there was no reasonable expectation of success, a person of ordinary skill in the art would not have been motivated to replace the particular *thermoplastic* polyether-ester-amide type resin of *Pougalan et al.* by a non-macroporous cross-linked plastic with rubber properties as is necessary to arrive at applicants' process. Last but not least, neither one of the references teaches or suggests the utilization of the specific first polymer material which is defined in applicants' claims so that the combined references fail to teach or suggest all of the claim limitations.

The Examiner's position that applicants' Claims 1, 2, 4 to 14 and 17 to 22 were rendered *prima facie* obvious by the teaching of *Pougalan et al.* when taken in view of the disclosures of *Sand* and of *Perman et al.* is, in light of the foregoing and the attached, as well as the remarks in applicants' reply dated March 04, 2005, not deemed to be well taken. It is therefore respectfully requested that the rejection be withdrawn. Favorable action is solicited.

#### REQUEST FOR EXTENSION OF TIME:

A request and fee for two month extensions of time in this case is included with the RCE form enclosed with this paper.

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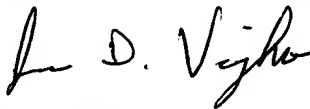
8) Cf. col. 9, indicated lines 61 to 64, of *US 5,340,614*.

9) Cf. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, 1442 (CAFC 1991).

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 14.1437. Please credit any excess fees to such deposit account.

Respectfully submitted,

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Encl.: Page 4 of *Fried's "Polymer Science and Technology"*, Prentice Hall PTR, Englewood Cliffs, NJ (1995)  
Pebax® Resins (product information)

JDV/BAS

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Pebax® polyether block amides are plasticizer-free thermoplastic elastomers belonging to the engineering polymer family. They are easy to process by injection molding and profile or film extrusion. Pebax® can be easily melt blended with other polymers.

Their unique chemistry (polyether block amide – PEBA) allows Pebax® to achieve a wide range of physical and mechanical properties by varying the monomeric block types and ratios.

The Pebax® product range extends from grades with properties of polyamide to grades with properties more like elastomers.

The remarkable processing performance of Pebax® makes them an ideal material for components requiring:

- Light weight;
- Great flexibility (extensive range);
- Resiliency;
- Very good dynamic properties due to low hysteresis (alternative flexure);
- High strength;
- Outstanding properties at low temperature (impact resistance, low rigification);
- Easy processing;
- Good resistance to most chemicals;
- Ability to be impregnated with fragrances;
- Outstanding impact resistance at low temperatures

*Keil + Weinlauf*

# Polymer Science and Technology

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**Library of Congress Cataloging-in-Publication Data**

Fried, Joel R.  
Polymer science and technology / Joel R. Fried.  
p. cm,  
Includes bibliographical references and index.  
ISBN 0-13-685561-X  
1. Polymers. 2. Polymerization. I. Title  
QD381.F73 1995 94-22289  
668.9--dc20 CIP

Editorial/production supervision: *Ann Sullivan*  
Cover design: *Wanda Lubelska*  
Manufacturing manager: *Alexis R. Heydt*



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Englewood Cliffs, New Jersey 07632

The publisher offers discounts on this book when ordered in bulk quantities. For more information, contact:

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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

**ISBN 0-13-685561-X**

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Prentice-Hall of Australia Pty. Limited, *Sydney*  
Prentice-Hall Canada Inc., *Toronto*  
Prentice-Hall Hispanoamericana, S.A., *Mexico*  
Prentice-Hall of India Private Limited, *New Delhi*  
Prentice-Hall of Japan, Inc., *Tokyo*  
Simon & Schuster Asia Pte. Ltd., *Singapore*  
Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

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of commercial grades of polystyrene, the average value of  $n$  may be 1000 or more. Given that the molecular weight of a polystyrene repeating unit is 104, a value of 1000 for  $n$  represents an average molecular weight of 104,000. Molecules with fewer than 10 repeating units are termed *oligomers* and exhibit quite different thermal and mechanical properties compared to the corresponding high-molecular-weight polymer. For example, oligomeric styrene having only seven repeating units (i.e.,  $n = 7$ ) is a viscous liquid at room temperature while commercial-grade, high-molecular-weight polystyrene is a brittle solid that does not soften until it is heated to above approximately 100°C.

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## 1.1 CLASSIFICATION OF POLYMERS

Thousands of polymers have been synthesized and more are likely to be produced in the future. Fortunately, all polymers can be assigned to one of two groups based upon their processing characteristics or type of polymerization mechanism. More specific classification can be made on the basis of polymer structure. Such groupings are useful because they facilitate the discussion of properties.

are given i

### 1.1.1 Thermoplastics and Thermosets

All polymers can be divided into two major groups based on their thermal processing behavior. Those polymers that can be heat-softened in order to process into a desired form are called *thermoplastics*. Waste thermoplastics can be recovered and refabricated by application of heat and pressure. Polystyrene is an important example of a commercial thermoplastic. Other major examples are the polyolefins (e.g., polyethylene and polypropylene) and poly(vinyl chloride). In comparison, *thermosets* are polymers whose individual chains have been chemically linked by covalent bonds during polymerization or by subsequent chemical or thermal treatment during fabrication. Once formed, these crosslinked networks resist heat softening, creep, and solvent attack, but cannot be thermally processed. Such properties make thermosets suitable materials for composites, coatings, and adhesive applications. Principal examples of thermosets include epoxy, phenol-formaldehyde resins, and unsaturated polyesters.

### 1.1.2 Classification Based upon Polymerization Mechanism

In addition to classifying polymers on the basis of their processing characteristics, polymers may also be classified according to the mechanism of polymerization. One approach is to classify polymers as either *addition* or *condensation* — a scheme attributed to Wallace Carothers,<sup>1</sup> a pioneer of the polymer industry working at Du Pont during the 1920s and 1930s. Polystyrene, which is polymerized by a sequential addition of styrene monomers (see Figure 1.1), is an

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